

In the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

1 1. (Previously Presented) A method of time scale
2 modification of a digital audio signal comprising the steps of:
3 analyzing an input signal in a set of first equally spaced,
4 overlapping time windows having a first overlap amount S_a ;
5 selecting a base overlap S_s for output synthesis corresponding
6 to a desired time scale modification;
7 calculating a cross-correlation $R[k]$ for index value k between
8 overlapping frames for a range of overlaps between $S_s + k_{\min}$ to
9 $S_s + k_{\max}$ for only a fixed length overlap region less than an entire
10 overlapping region;
11 selecting a value K yielding the greatest cross-correlation
12 value $R[k]$;
13 synthesizing an output signal in a set of second equally
14 spaced, overlapping time windows having a second overlap amount
15 equal to $S_s + K$.

1 2. (Currently Amended) ~~The~~ A method of claim 1, wherein time
2 scale modification of a digital audio signal comprising the steps
3 of:
4 analyzing an input signal in a set of first equally spaced,
5 overlapping time windows having a first overlap amount S_a ;
6 selecting a base overlap S_s for output synthesis corresponding
7 to a desired time scale modification;
8 ~~said step of~~ calculating the cross-correlation $R[k]$ for index
9 value k between overlapping frames for a range of overlaps between
10 $S_s + k_{\min}$ to $S_s + k_{\max}$ for only a fixed length overlap region less
11 than an entire overlapping region ~~employs~~ employing the equation

$$R[k] = \sum_{i=initial_x}^{final_x} sign\{y[mS_s + i + k]\} sign\{x[mS_a + i]\}$$

13 where: $x[i]$ is the analysis of the input signal for index value i ;
 14 $y[i]$ is a synthesis signal for the index value i ;
 15 selecting a value K yielding the greatest cross-correlation
 16 value $R[k]$;
 17 synthesizing an output signal in a set of second equally
 18 spaced, overlapping time windows having a second overlap amount
 19 equal to $S_s + K$.

1 3. (Original) The method of claim 1, wherein:
 2 said step of calculating the cross-correlation $R[k]$ employs
 3 only a center half of the overlap region for $k = 0$.

1 4. (Previously Presented) A digital audio apparatus
 2 comprising:
 3 a source of a digital audio signal;
 4 a digital signal processor connected to said source of a
 5 digital audio signal programmed to perform time scale modification
 6 on the digital audio signal by
 7 analyzing an input signal in a set of first equally
 8 spaced, overlapping time windows having a first overlap
 9 amount,
 10 selecting a base overlap S_s for output synthesis
 11 corresponding to a desired time scale modification,
 12 calculating a cross-correlation $R[k]$ for index value k
 13 between overlapping frames for a range of overlaps between
 14 $S_s + k_{min}$ to $S_s + k_{max}$ for only a fixed length overlap region
 15 less than an entire overlapping region;
 16 selecting a value K yielding the greatest
 17 cross-correlation value $R[k]$,

18 synthesizing an output signal in a set of second equally
 19 spaced, overlapping time windows having a second overlap
 20 amount equal to $S_s + K$; and
 21 an output device connected to the digital signal processor for
 22 outputting the time scale modified digital audio signal.

1 5. (Currently Amended) ~~The~~ A digital audio apparatus ~~of~~
 2 ~~claim 4, wherein comprising:~~
 3 a source of a digital audio signal;
 4 a digital signal processor connected to said source of a
 5 digital audio signal programmed to perform time scale modification
 6 on the digital audio signal by
 7 analyzing an input signal in a set of first equally
 8 spaced, overlapping time windows having a first overlap
 9 amount,
 10 selecting a base overlap S_s for output synthesis
 11 corresponding to a desired time scale modification,
 12 ~~said digital signal processor is programmed to calculate~~
 13 ~~the~~ calculating a cross-correlation $R[k]$ for index value k
 14 between overlapping frames for a range of overlaps between
 15 $S_s + k_{min}$ to $S_s + k_{max}$ for only a fixed length overlap region
 16 less than an entire overlapping region ~~employs~~ employing the
 17 equation

$$18 \quad R[k] = \sum_{i=initial_x}^{final_x} sign\{y[mS_s + i + k]\} . sign\{x[mS_a + i]\}$$

19 where: $x[i]$ is the analysis of the input signal for index
 20 value i ; $y[i]$ is a synthesis signal for the index value i ;
 21 selecting a value K yielding the greatest
 22 cross-correlation value $R[k]$,

23 synthesizing an output signal in a set of second equally
24 spaced, overlapping time windows having a second overlap
25 amount equal to $S_s + K$; and
26 an output device connected to the digital signal processor for
27 outputting the time scale modified digital audio signal.

1 6. (Original) The digital audio apparatus of claim 4,
2 wherein:
3 said digital signal processor is programmed to calculate the
4 cross-correlation $R[k]$ employing only a center half of the overlap
5 region for $k = 0$.